COVER SHEET

The Lockhart Report and the ethics of the creation and destruction of preimplantation embryos for medical research

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ABSTRACT
On 19 December 2005 the recommendations of the Lockhart Review were released. One of the key recommendations was that current laws be amended to permit the creation of embryonic stem cells by somatic cell nuclear transfer. The Lockhart Report analysed the ethical arguments for and against the creation of embryos by nuclear transfer. It rationalised that, although there were various objections to such technology from some sections of Australian society, the good that this science has the potential to produce in the form of stem cell therapies to assist with or cure disease should prevail. This article will critically analyse the ethical arguments presented to the Lockhart Review and assess how the Review Committee resolved the debate as to the ethical status of a preimplantation embryo. It will be contended that the recommendations for reform should be fully implemented by the Federal Government, to enable scientists to have full access to both embryonic and adult stem cells, including custom-made stem cell lines created through the SCNT process, to allow medical research to progress to its fullest potential.

Introduction

In 2005 a Commonwealth Legislation Review Committee, termed the 'Lockhart Review', was appointed by the Minister For Ageing to undertake an independent review of the legislation regulating human embryo research, the *Research Involving Human Embryos Act 2002* (Cth) and *Prohibition of Human Cloning Act 2002* (Cth).[1] The Lockhart Review conducted an extensive consultation process, considering 1035 written submissions and hearing oral evidence from 109 people across Australia.[2]

The key recommendation of the Lockhart Report which has captured the attention of politicians, interests groups and the media is the call to amend current laws to permit somatic cell nuclear transfer (SCNT), also referred to as 'therapeutic cloning'. This process is currently legal in other countries such as the United Kingdom, South Korea and Singapore. It is also occurring in countries where there is no national regulation, such as the United States.[3] The terms of reference of the Lockhart Review did not include an analysis of the ethical debate surrounding embryo research, as it was considered that these issues had been fully aired when the original Commonwealth legislation was enacted. However, a reading of many of the submissions made to the Committee, reveals that the ethics of the creation and destruction of human embryos for research purposes was a common theme. It is also clear that in the post-Review analysis of the recommendations, which will become of increasing relevance leading up to the introduction of amended legislation, this discussion has been reignited.

This article will examine the Lockhart recommendation that SCNT and related practices be permitted in Australia. In examining this issue, the ethical concerns surrounding destructive embryo research will be critically analysed. Some commentators are of the view that preimplantation embryos are human life or at least, potential life, and as such should be accorded the rights that all persons are entitled to, including the right to life and bodily integrity.[4] Others would argue that such entities are a primitive collection of cells that can provide valuable research tools, with the long term potential to alleviate the suffering of many Australians affected by serious diseases.[5] To reconcile these competing views, an analysis of the ethical status of a preimplantation embryo will be undertaken. This assessment will be informed by some of the key submissions made to the Lockhart Review, and the

conclusions made by the Committee, which provide both current and valuable insights. After conducting this analysis, it will be suggested that the recommendations of the Lockhart Report should be fully implemented as they will ensure that medical research can progress to its fullest potential.

The current laws relating to embryo research

Currently in Australia, the *Prohibition of Human Cloning Act 2002* (Cth) provides that it is illegal to create a human embryo other than by fertilisation of a human egg by human sperm[6] and for any purpose other than for achieving pregnancy in a woman.[7] Scientists are therefore not currently permitted to create human embryos known as 'human embryo clones' by the process somatic cell nuclear transfer ('SCNT'), also referred to as 'therapeutic cloning'.[8] The legislation further outlaws the creation of human-animal hybrids or chimeric embryos, embryos with the genetic material of more than two people and embryos with genetic alterations.[9] If such an embryo entity is created illegally, it is unlawful to implant it into the uterus of a woman, a practice referred to as 'reproductive cloning'.[10] It is also illegal to develop such an embryo *in vitro* for a period of more than fourteen days.[11]

The only human embryos which are currently permitted to be used in biomedical research are excess ART embryos, that is, embryos which have been created *in vitro* to achieve pregnancy in a woman, but which are no longer required by the creating couple for reproductive purposes.[12] Previously only excess ART embryos created prior to 5 April 2002 could become the subject of biomedical research.[13] However, the provisions containing this time restriction were automatically repealed on 5 April 2005.[14]

Embryos can only be donated to research when the creating couple have provided informed consent.[15] Excess ART embryos have been considered to be less ethically controversial as they are already in existence and will be disposed of at the end of the permissible storage period, unless the creating couple donate them to research or to another infertile couple.[16]

As an indication of how the process of SCNT, if made legal, may be controlled, research involving excess ART embryos is currently tightly regulated by both Commonwealth and State legislation and by ethical guidelines.[17] In order for an organisation to conduct destructive research on excess human embryos, it must obtain a licence from the Embryo Research Licensing Committee of the NHMRC.[18] There is a two-step process that must be followed. Firstly the research team must obtain the approval of the relevant institutional human research ethics committee (HREC). In considering the application, the HREC must ensure that the research project adheres to the guidelines set out in the National Statement on Ethical Conduct in Research Involving Humans.[19] Subsequently, the research team must forward the HREC approval to the NHMRC Research Licensing Committee, which is then in a position to consider their application.

The Licensing Committee must consider the HREC assessment along with the relevant NHMRC guidelines such as the *Ethical guidelines on assisted reproductive technology*.[20] The legislation then requires the Licensing Committee to balance two requirements of the *Research Involving Human Embryos Act 2002* (Cth) in deciding whether to grant a license. The first requirement is the need to restrict the number of excess ART embryos to the minimum number likely to achieve the goals of the research project.[21] The second is that the proposed research must be likely to contribute to a significant advance in knowledge or improvement in technologies for treatment, which could not reasonably be achieved by other means.[22]

The relevant recommendations of the Lockhart Review Report

The Lockhart Review Report recommends sweeping reform of the current legislative regime which would bring Australia into line with other countries such as the United Kingdom, which has permitted the creation of embryos via SCNT since 2001.[23]

The Review Committee acknowledged the concerns of various sectors of Australian society in relation to the creation of human embryos for research purposes, however, it identified that the primary concern was that legalisation of the creation of embryos by nuclear transfer would lead to reproductive cloning. It noted that reproductive cloning of humans 'is considered unacceptable throughout the world because of the ethical concerns about the social and psychological implications of creating a copy of a living or dead person, and safety issues associated with the technology.' [24] The Committee took a pragmatic line, acknowledging the potential medical benefits of such technology and recommended that SCNT be permitted under licence, 'to create and use human embryo clones for research, training and clinical application, including the production of human embryonic stem cells'.[25] This being on the proviso that it will be illegal to implant the resulting embryos into the body of a woman, or to allow them to develop *in vitro* for more than fourteen days.[26]

Consistent with this approach, the Report recommended that the definition of 'embryo' be amended in both the *Prohibition of Human Cloning Act* and *Research Involving Human Embryos Act 2002* (Cth) to include an embryo created by procedures other than fertilisation of an egg and sperm, such as via SCNT. It suggests that the starting phase of an embryo be defined at a later stage than is currently provided for in the legislation. The current definition sets out that the starting point is the appearance of two pro-nuclei.[27] The Committee considered that syngamy was a better starting point because they noted that 'it is at this stage, when the maternal and paternal chromosomes align, that a new genetic entity is formed.' However, it concluded that because the precise point of syngamy is difficult to observe, the definition should refer to the first cell division.

It was suggested that the legislative definition of human embryo be amended to the following:

A human embryo is a discrete living entity that has a human genome or an altered human genome and that has arisen from either:

1. the first mitotic cell division when fertilisation of a human oocyte by a human sperm is complete; or
2. any other process that initiates organised development of a biological entity with a human nuclear genome or altered human nuclear genome that has the potential to develop up to, or beyond, 14 days and has not yet reached eight weeks of development.'[28]

The Committee were of the view that a range of scientific practices should also be permitted to create human embryos, other than by fertilisation. It was of the view that all nuclear and pronuclear transfer methods (including transfer of stem cell nuclei) should be permitted, under license. It also suggested that parthenogenetic activation of oocytes should be permitted to allow oocyte maturation research. Further recommendations were that the creation of embryos using the genetic material from more that two people, and the creation using precursor cells from a human embryo or foetus, should also be legalised.[29]

In the United Kingdom, the Human Fertilisation and Embryology Authority (HFEA) recently issued a licence to a research team at the University of Newcastle-upon-Tyne to use the SCNT process to conduct research into a mitochondrial disorder, muscular dystrophy. In order to undertake this research the team were authorised to create a human embryo via SCNT containing the genetic material of three people. Such a procedure would currently be unlawful in Australia due to the prohibition on creating or developing embryos with the genetic material of more than two people.[30] However, if the Lockhart recommendations are now implemented, such a procedure would become legal.[31]

The Report does not envisage that the current two-step process of HREC, then NHMRC Embryo Research Licensing Committee, approval would change. However, the Review Committee suggested that the powers of the Licensing Committee should be expanded to enable it to consider license applications which fit within the newly legalised research practices. The Licensing Committee would continue to have a

monitoring and compliance function. It also envisaged that the Licensing Committee would have increased discretion to consider research proposals which do not fit squarely within the legislative guidelines, in order that constant amendments do not need to be made to keep pace with scientific advances.[32] Recommendations 50 to 53 of the Report set out that the Licensing Committee should also be authorised to give binding rulings and to grant licenses on the basis of those rulings on the interpretation of legislation, provided that it would report immediately to the NHMRC and to Commonwealth Parliament on such rulings.

The Review Committee also believed that a national stem cell bank would be the most effective way to enhance research, in particular, to provide scientists with effective access to a variety of stem cell lines and to improve quality control. It was considered that the Australian Stem Cell Centre could be expanded to accommodate such a stem cell bank.[33]

The recommendations of the Lockhart Review Report are considered by many to be extremely controversial. The moral status of a preimplantation embryo was the pivotal issue in many of the submissions made to the Review Committee and in much of the post-Report debate. It is therefore timely to examine the various ethical positions that were presented to the Committee, and to analyse the approach that the Review Committee took to this important issue.

The moral status of a human preimplantation embryo

The Review Committee identified that there were three different ethical positions that underpinned the submissions made. These positions echoed those identified in a report published by a United Kingdom, House of Commons Science and Technology Committee in 2005.[34] They were:

1. That the embryo is human life and is therefore entitled to conferral of full human rights, including the right to life, and should not be subject to destructive research under any circumstances
2. That the development of personhood is a gradual process but that the embryo is entitled to some protection; embryos should be subject to research in certain appropriate circumstances, such as when they are excess to ART needs, nonviable or unsuitable for implantation
3. That the embryo is no more than a collection of cells, it may have the potential to develop into a human being, however the embryo entity should be used in medical research due to its potential to provide benefit to medicine and science and the treatment of disease.[35]

The Review Committee observed that, in general, position (a) was often held by community interest and religious groups and position (c) by scientists, however, that this was not always the case and that there were many different views put forward.[36] Important contexts which the Review Committee used to analyse the submissions were: the intended use of the embryo, the method of creation, social relationships and the status of a human embryo.

In relation to the intended use of the embryo, some submissions argued that an embryo created for a couple intending to have a child and implanted in a woman's uterus should have a higher moral status than an embryo created purely for research purposes. Proponents of this argument contended that the moral significance of an embryo created by SCNT was linked to its potential through research to assist in the development of medical treatments, rather than to its potential for human life. One submission argued that 'If the law said that SCNT embryos cannot be implanted, then they would not be a potential human being but 'just a bunch of cells'.[37] Others argued that the intended use of an embryo has no relevance to the embryo's status.[38]

In relation to the method of creation, some submissions contended that social relationships distinguished embryos formed for the purpose of family creation from embryos created for research purposes. These submissions argued that the family connections of embryos formed for ART purposes are what defines them as human beings.[39] Others did not agree with such distinctions stating that embryos, no matter what their social context, had the clear potential to develop into human beings.[40]

The Review Committee astutely chose not to clearly support a particular moral position in the debate about the ethical status of a preimplantation embryo. The Report does reveal that the Review Committee found it 'difficult to logically define a moral difference between embryos formed by fertilisation and those formed by nuclear transfer or related methods.'[41] However, the Review Committee accepted that embryos formed by ART for the purpose of family creation had a greater social or relational significance than embryos formed by nuclear transfer.[42]

It could be argued that the Review Committee adopted an approach between positions two and three in relation to the moral status of a preimplantation embryo. The Committee considered that the entity created through SCNT is a human embryo and given the right conditions, has the potential to develop into a human being.[43] It was therefore not of the view that it was merely 'a collection of cells'. However, it accepted arguments that 'the moral significance of cloned embryos that are not implanted is linked more closely to their potential for research developments, including the development of treatments for serious medical conditions, than to their potential as a human life.'[44]

This position is consistent with existing policies in Australia revealing how the preimplantation embryo is valued in our society.[45] Excess ART embryos can only be stored for a maximum of ten years, and then will be removed from storage and disposed of if not donated to research or to another couple.[46] Embryos rejected in the preimplantation genetic diagnosis process will also be disposed of.

In general, Australian law does not consider developing humans to have the same rights and protections as children or adults. A foetus has generally been held to have no legal personality[47] until it is born and has a separate existence from its mother.[48] It therefore does not have an entitlement to human rights such as the right to life and bodily integrity. Although abortion is technically illegal in a number of Australian states,[49] it has been held that it is not unlawful when the person performing the procedure had a reasonable belief that it was necessary to avert serious danger to the mother's physical or mental health.[50] The mother's interests therefore prevail over the rights of her unborn child. The NHMRC Ethical Guidelines state that ART embryos are not to be treated as 'mere tissue',[51] however, as the creation of embryos through SCNT is currently illegal, there is nothing presently in legislation to indicate what their moral position may be if they were made legal.

Some would argue that preimplantion embryos are 'potential life', however, if they are created for the purposes of destructive research and never intended to be implanted, it is arguable that they do not even possess the potential for life. The Review Committee's recommendations that SCNT be legalised, seems to indicate the view that the nuclear transfer embryo has no rights other than in the context of its use in medical research, being the purpose for its creation.

Although the Review Committee's position on the ethical status of human preimplantation embryos may be considered to be inconclusive, there were many ethical arguments presented to the Committee in support of and against the creation and destruction of embryos for research purposes. The Report makes much clearer recommendations in relation to these issues.

Ethical arguments presented for and against the creation and destruction of SCNT embryos for research purposes

The primary argument presented in the Lockhart submissions against nuclear transfer was that it is unethical to create human embryos solely for the purpose of destroying them to extract stem cells, and that such practice conflicts with concepts such as the dignity of the individual.[52] This argument was premised on the perception that a SCNT embryo is 'human life', that life begins at the time of fertilisation and should be protected by our society from the moment it comes into existence.[53] For others it was underpinned by the belief that a human embryo is 'potential life' and has the potential to develop into a human being.[54] Another contention was that to permit embryos to be created and used for research purposes treats them as a product, a position that was described as 'the commoditisation of unborn life.'[55]

However, the Review Committee rationalised that it could not see a discernable difference between what was currently occurring with the destruction of excess ART embryos for research and the same practices occurring in the future in relation to SCNT embryos.[56] The Committee was of the belief that to permit one practice and not the other would be inconsistent, and would 'appear to attach more importance to the treatment of infertility than to the treatment of other diseases and conditions'[57] that could be assisted by research on embryos created by nuclear transfer.

Another major objection to proceeding down the SCNT path was that it would inevitably lead to the practice of human reproductive cloning.[58] This has been termed the 'slippery slope' argument.[59] It was considered that as therapeutic and reproductive cloning are based on the same technology, the use of one would inevitably lead to the utilisation of the other.[60] In contrast, another submission was of the view that it was the intention behind each practice which clearly distinguished them from each other, therapeutic cloning being for the purpose of creating a stem cell line, and reproductive cloning occurring to create a human being.[61] The Review Committee accepted that Australian scientists have no intention of engaging in reproductive cloning.[62] The Committee was further convinced that strict legislative guidelines prohibiting reproductive cloning would reassure the Australian community that the practice of reproductive cloning would not occur.[63]

A further concern was that the creation of stem cell lines requires a steady supply of human oocytes, and that such demand could lead to the exploitation of women, particularly women of low socio-economic means, if financial incentives were offered for egg donation.[64] There were also concerns that egg donation requires invasive retrieval methods.[65] The recent controversy in South Korea where female researchers were found to be donating their own eggs was cited in support.[66] However, one submission suggested that egg donation could proceed in a similar fashion to that of the current system of organ donation. For example, a woman suffering from a severe disease who needed to utilise a stem cell therapy could use her own eggs for this purpose. For males, and for females unable to produce viable eggs, a family member, friend or stranger could consent to the donation of their eggs to the patient in question.[67]

The Review Committee accepted that there were ethical concerns with egg donation, as the donor would receive no direct medical benefit but would be exposed to possible medical risks. In response, the Committee recommended that the NHMRC develop strict guidelines regulating egg donation, and that donors be required to give free and informed consent. The committee was of the view that donors should not be paid for their services, but that they should be reimbursed for reasonable expenses.[68] The Report also recommended that there be a clear divide between ART treatment and donation for SCNT, so that women involved in fertility treatment are not coerced into producing excess eggs.[69] The Committee also suggested that further research be directed at identifying alternative egg sources.[70] To assist in ensuring a supply of oocytes, the Committee recommended that human nuclear transfer into animal egg cytoplasm should be permitted.[71]

Another contention was that the creation of embryos via SCNT is unnecessary, as research on adult stem cells can achieve the same or better results.[72] Submissions along these lines argued that if medical therapies can be developed from adult stem cells, it is unethical to create and destroy embryos by nuclear transfer. It was pointed out that adult stem cells can also be derived from the patient, avoiding any problem of rejection when reintroduced into the patient's body. To add weight to these contentions, it was argued that while successful stem cell therapies have been developed from adult stem cells, to date, no such therapies, have yet been fully developed from embryonic stem cells.[73]

The alternative viewpoint presented was that it is too early to determine whether adult stem cell research will be capable of developing therapies to treat some afflictions, such as spinal cord injuries, and that scientists should have access to both types of research in order to fully develop the range of possible medical therapies.[74] The Review Committee accepted the view that adult stem cell therapies

may have less potential than embryonic stem cell therapies and that both forms of research should proceed so that stem cell research can reach its fullest potential.[75]

The primary position presented to the Review Committee in support of nuclear transfer was that human preimplantation embryos should be used in biomedical research due to the great potential that they have to benefit science and the development of medical therapies. Submissions in support of this view argued that a nuclear transfer embryo is not 'human life' and some argued it was not even 'potential life'. Some submissions contended that SCNT embryos are never intended to be transferred to a woman's uterus and, as the requisite next step of implantation will not be carried out, they do not have the potential to develop into a human being.[76] One submission argued that there should be different classes of embryos based on the method of creation, and that 'Cells that are to be studied entirely *in vitro* in a research context, and are not formed from a fertilised embryo, should not be regarded as embryos [...]'[77] Consistent with this approach, it has been previously argued that for an embryo to be regarded as a human life or as an entity with interests, it must possess 'a nervous system capable of sentience, if not also of cognition and consciousness.'[78]

Another submission contended that the destruction of an embryo for research purposes can be justified if it takes place 'when a greater benefit will result.'[79] Another reasoned that as a preimplantation embryo has no right to life, there is no moral justification needed to create embryos for research. This submission further argued that it was only the scientific point of the research which required justification.[80] An alternate perspective was that 'It is difficult to see how an embryo created and destroyed for research purposes can be considered to have been harmed, it is no worse position than if it had not been brought into existence in the first place.'[81]

However, the potential for stem cell research to lead to medical therapies that may assist a wide range of diseases, was the overriding theme.[82] Many submissions were received from Australians suffering from diseases such as diabetes, spinal injuries, Parkinson's disease and motor neurone disease. The majority of these people viewed stem cell research in the context of having the potential to ease their suffering.[83]

Other submissions detailed the developments made in stem cell research, revealing, for example, that research performed on animals has shown some promise that stem cell therapies have the potential to improve the function of spinal cord injury patients.[84] In the United Kingdom, a research team is studying motor neurone disease using SCNT.[85] A submission from the Diabetes Transplant Unit indicated that if nuclear transfer was legalised in Australia, the unit would apply for a licence to create stem cell lines that could be used as models for studying Type 1 diabetes.[86]

However, some submissions questioned whether stem cells created via SCNT will ever achieve the potential of therapeutic applications, as the fact that stem cells therapies are 'custom-made' for the patient may subsequently ensure that the cost of such therapy becomes prohibitive.[87] In response, it was argued that stem cells derived from SCNT can initially be used as valuable tools in studying certain diseases. This can enable scientists to study the way that a disease in question progresses and potentially how to prevent or treat it.[88] It is also clear that the technology can be used in the screening of new drugs.[89]

The Report certainly canvasses the concern that it may be up to ten years before current stem cell research is transformed into viable medical therapies.[90] In this regard there were conflicting ethical positions put forward. One argument was that there was not enough evidence that stem cell therapies would be successful, and consequently, that Australia should only lift the current ban on nuclear transfer when there is clear evidence of successful therapies.[91] An alternative viewpoint, and one that was embraced by the Committee, was that the ethical starting point should be: why should Australia not be supporting this research? The contention being that if such research may have the potential to save lives, it should be allowed to occur immediately as 'if we cause a delay in this research, we may thereby be responsible for the premature deaths of many people.'[92] The Review Committee concluded that

the further development of embryonic stem cell research requires the creation of SCNT embryos which are custom-made to develop specific cellular therapies, or to provide modelling for various diseases.[93]

A further ethical issue raised in other forums, is that if Australia now continues with its ban on nuclear transfer based on a policy position that the practice is unethical, should Australians be permitted to benefit if medical therapies are successfully developed overseas?[94] Should a benefit be extracted from an alleged moral wrong? The contention being that Australians should not benefit from practices which are considered unethical. However, it would then follow that many people may not be able to utilise medical therapies that would give them increased quality and length of life. This issue was also raised in the Review, with the possible beneficiaries of stem cell therapies acknowledging the enormous benefit that stem cell therapies may have for hundreds of thousands of Australians.[95]

The philosophical theory of utilitarianism lends support to the argument in favour of the SCNT process being made legal. This theory 'resolves a conflict of individual interests in the manner which serves the greater aggregate interest.'[96] Accordingly, whether the destruction of a human embryo for the purposes of research is morally right or wrong turns on whether such destruction facilitates research that is overwhelmingly for the common good.[97] Many submissions echoed this theme. For example, Stem Cell Ethics Australia contended that:

> Public benefit is the paramount standard for the conduct of science. Where particular professional, individual, institutional, or commercial considerations conflict with public benefit, then public benefit must prevail.[98]

The Review Committee's final recommendations firmly supported this line of reasoning. The Committee was of the view that the greater the potential benefits of an activity such as embryo research, the greater need for ethical objections to be at a high level, and widely held, to justify preventing such research. It stated that, just because some sectors of the community object to a practice, does not mean that such a practice should be rendered illegal.[99] In coming to the conclusion that SCNT and other procedures to create embryos should be made legal, the Committee noted that it was impossible to reconcile the various views held by different sectors of Australian society as to the moral status of an embryo. However, it was clear that the majority supported medical research aimed at assisting infertile couples to have children and to prevent or cure serious disease. The Review Committee stated, 'the social and moral value that some communities attach to the human embryo needs to be balanced against the social and moral value that other communities attach to the treatment of disease and to helping people to have a family'.[100] The Committee rationalised that, although community surveys displayed widespread disapproval for reproductive cloning, the majority of Australians thought embryonic stem cell research was useful and acceptable and were in favour of using such research to assist with the treatment of disease.[101]

The way forward

The countless submissions made to the Lockhart Review highlight that Australia is a pluralistic society, and that there are many complex ethical issues relevant to the debate about the creation and destruction of SCNT embryos for medical research. There were numerous submissions to the Lockhart Review from various sectors of the community, both organisations and individuals, who remained extremely concerned that the creation and destruction of human embryos in the name of research is clearly unethical and a violation of the sanctity of human life. In contrast, many submissions, particularly from the scientific community and from those coping with serious disease, highlighted the gradual progress being made in embryonic stem cell research that continues to give hope to people suffering from serious afflictions that stem cell therapies may be able to improve their quality of life.

The Review Committee diplomatically acknowledged that there was a diversity of opinion in Australia in relation to the moral status of a preimplantation embryo. The Committee accepted that such disparate views cannot be reconciled and that

disagreement will remain regardless of its recommendations. It therefore looked to a common concern and found this in 'broad community support for medical research aimed at understanding, preventing or treating disease, and for research and clinical practice aimed at assisting people to have children (including general acceptance that this process may involve the 'wastage' of some embryos)'[102]

In recommending that SCNT be permitted, the Review Committee took a utilitarian approach and placed the benefits that can be brought to medical research through stem cell research, above the ethical concerns of some sectors of the community. This approach, which resolves a conflict of interest in favour of the course that will benefit the common good, should be adopted, as has been the case in the United Kingdom. Although medical science has yet to develop a successful stem cell therapy from embryonic stem cells, there are indications that such therapies may be available in the next five to ten years.[103]

This approach is also consistent with the legal and moral status of an SCNT embryo. Australian society already accepts the destruction of excess ART embryos at the end of their storage period and when donated to medical research. It also accepts the destruction of unsuitable embryos rejected through the pre-implantation diagnosis process. It is only a small step forward for our society to now embrace the creation and destruction of nuclear transfer embryos for research purposes. It is clear that such an entity has a limited legal status, and does not possess human rights such as the right to life. It is also argued that its moral significance arises purely in the context of its purpose for creation, being medical research. Australian scientists have indicated that they have no intention of utilising the technology for reproductive cloning, so such objections to the legalisation of nuclear transfer are unjustified.[104]

It is now for Commonwealth Parliament to decide on legislative reform to show the way forward for Australia. It is argued that the approach of legislators should be one that was argued before the Review Committee - that is, why should Australia not be supporting stem cell research? If such research may have the potential to save or improve the quality of many lives, it should be legalised as soon as possible due to the overwhelming concern that 'if we cause a delay in this research, we may thereby be responsible for the premature deaths of many people.'[105]

ENDNOTES

1 The then Minister for Ageing, the Hon. Julie Bishop MP, had portfolio responsibility for human cloning and stem cell research. Each Act provided that it was required to be independently reviewed by 19 December 2005. The Committee was made up of six members with backgrounds in law, medicine, science and ethics and was chaired by the late Hon John S Lockhart AO QC. Details of the Committee are available at http://www.lockhartreview.com.au/public/content/ViewCategory.aspx?id=2 [accessed January 22, 2006].

2 Legislation Review Committee Review of the Human Cloning Act 2002 and the Research Involving Embryos Act 2002 (hereafter, 'The Report'), 'Lockhart Review Supports Strong Regulation of Research Involving Human Embryos' (Press Release, December 19, 2005), p. 1.

3 At least three States in the United States permit SCNT including California and New Jersey.

4 Rickard M, 'Key Ethical Issues in Embryonic Stem Cell Research', Social Policy Group - Information and Research Services, Department of the Commonwealth Parliamentary Library, Current Issues Brief No.5 2002-3, November 12, 2002, pp. 7-12, (p. 2).

5 Rickard, 'Key Ethical Issues in Embryonic Stem Cell Research', op. cit., pp. 8-10.

6 Prohibition of Human Cloning Act, 2002 (Cth), section 13.

7 Prohibition of Human Cloning Act, 2002 (Cth), section 14.

8 Prohibition of Human Cloning Act, 2002 (Cth), section 9.

9 Prohibition of Human Cloning Act, 2002 (Cth), Divisions 1 and 2.

10 Prohibition of Human Cloning Act, 2002 (Cth), Section 10.

11 Prohibition of Human Cloning Act 2002 (Cth) s 16.

12 Research Involving Human Embryos Act 2002 (Cth), section 10.

13 Research Involving Human Embryos Act 2002 (Cth) s 24(3)(b), s 24(1)(c) and 24(3).

14 Research Involving Human Embryos Act 2002 (Cth) s 46.

15 Research Involving Human Embryos Act 2002 (Cth), section 21. Australian Government, National Health and Medical Research Council (NHMRC), Australian Health Ethics Committee, 'Ethical Guidelines on the use of assisted reproductive technology in clinical practice and research', Canberra, 2004, 9.9 and Section 17 (hereafter 'NHMRC Ethical guidelines') available at http://www.nhmrc.gov.au/publications/synopses/e28syn.htmat [accessed at 15 January 2006].

16 Clinics can store embryos for five years, and couples then have the option of renewing their consent to storage for a further 5 years. NHMRC, 'Ethical Guidelines', 8.8. Victorian legislation allows embryos to be stored for 5 years, but longer on application to the Infertility Treatment Authority. Infertility Treatment Act, 1995 (Vic) section 52(4). For example, in one study over an eleven-year period 89.5% of IVF patients chose to discard their unused embryos, see: Kovacs G, Breheny S, Dear M, 'Embryo Donation at an Australian university in-vitro fertilization clinic: issues and outcomes', Medical Journal of Australia, vol. 178, no. 3, 2003, available at http://www.mja.com.au/public/issues/178_03_030203/kov10329_fm.html [accessed January 17, 2006].

17 Research Involving Human Embryos Act, 2002 (Cth). The States have enacted mirror legislation, part 2A and section 166 (and relevant provisions of Part 1) of the amended Infertility Treatment Act, 1995 (Vic); Part 4B and relevant provisions in Division 1 of Part 1 of the amended Human Reproductive Technology Act, 1991(WA), Human Cloning and Embryo Research Act, 2004 (ACT), Research Involving Human Embryos Act, 2003 (New South Wales); Human Cloning and Other Prohibited Practices Act, 2003 (NSW); Research Involving Human Embryos and Prohibition of Human Cloning Act, 2003 (Qld); Research Involving Human Embryos Act, 2003 (SA); Prohibition of Human Cloning Act, 2003 (SA); Human Cloning and Other Prohibited Practices Act, 2003 (Tas); Human Embryonic Research Legislation Act, 2003 (Tas).

18 Research Involving Human Embryos Act, 2002 (Cth), section 20.

19 Research Involving Human Embryos Act, 2002 (Cth), section 21.

20 Research Involving Human Embryos Act, 2003 (Cth), section 21.

21 Research Involving Human Embryos Act, 2003 (Cth), section 21.

22 Research Involving Human Embryos Act, 2002 (Cth) section 21.

23 Human Fertilisation and Embryology (Research Purposes) Regulations, 2001 (UK).

24 The Report, p. 55.

25 The Report, Recommendation 23, p. 172.

26 The Report, Recommendation 23, p. 172.

27 The current definition of embryo is: 'a live embryo that has a human genome or altered genome and that has been developing for less than 8 weeks since the appearance of 2 pro-nuclei or the initiation of its development by other means.' Prohibition of Human Cloning Act, section 8.

28 The Report, Recommendation 28, p. 174.

29 The Report, Recommendations 25-27, p. 172.

30 Prohibition of Human Cloning Act, 2002 (Cth), section 15.

31 The Report, Recommendation 26, p. 172.

32 The Report, Recommendation 50-53, p. 183.

33 The Report, Recommendations 47-49, p. 181.

34 The United Kingdom Parliament, House of Commons, Select Committee on Science and Technology, 'Human Reproductive Technologies and the Law: Fifth Report', March 14, 2005, available at http://www.publications.parliament.uk/pa/cm200405/cmselect/cmsctech/7/702.htm [accessed January 22, 2006].

35 The Report, pp. 73-4. These ethical positions are also identical to those identified in the New Zealand Ministry for Health, 'Guidelines on Using Cells from Established Human Embryonic Stem Cell Lines for Research: discussion document', Wellington, 2005, available at http://www.moh.govt.nz/moh.nsf/0/DF32587ABFCA33C5CC2570C800708A24/$File/GuidelinesUsingCells.pdf [accessed January 19, 2006].
36 The Report, p. 74.
37 Oral evidence, Brisbane Hearings, 'Associate Professor Melissa Little, Institute for Molecular Bioscience', University of Queensland, The Report, p. 71.
38 The Report, p. 71.
39 The Report, pp. 72-3.
40 The Report, p. 73.
41 The Report p. 88.
41 The Report p. 88.
42 The Report, p. 88.
43 The Report, p. 170.
44 The Report, p. 170.
45 This was an approach taken in New Zealand Ministry for Health, 'Guidelines on Using Cells from Established Human Embryonic Stem Cell Lines for Research: discussion document', op. cit., pp 19-20.
46 NHMRC, 'Ethical Guidelines', 8.8.
47 A legal person is an entity on which a legal system confers rights and imposes duties.
48 Watt v Rama [1972] VR 353. See also F and F (1989) FLC 92-031 where the Family Court refused to grant an injunction to a husband who was seeking to restrain his estranged wife from having an abortion. The husband argued that the unborn child had a right to life. The court rejected this argument on the basis that a foetus has no legal personality and 'cannot have a right of its own until it is born and has a separate existence from its mother.' In criminal law, a child becomes a person capable of being killed when it has completely proceeded in a living state from the body of its mother, whether it has breathed or not, and whether it has an independent circulation or not, and whether the navel-string is severed or not. Criminal Code, 1989 (Qld), section 292. However, under section 313 it is an offence to kill an unborn child.
49 For example, Crimes Act, 1958 (Vic), section 10.
50 For example, R v Davidson [1969] VR 667.
51 NHMRC, 'Ethical Guidelines', op cit, 15.2.
52 Submission to Lockhart Review Committee ('LRC') 376, Queensland Right to Life.
53 LRC 376, Queensland Right to Life.
54 The Report, p. xvii.
55 LRC 376, Queensland Right to Life. This argument has been put forward by Finnis J, 'Some Fundamental Evils in Generating Human Embryos by Cloning', in Ethics and Law in Biological Science, Boston: Kluwer Academic Publishers, 2002, pp. 104-6.
56 The Report, p. xvii.
57 The Report, p. xvii. This argument was raised in Parker M, 'Reasoning About Embryos, Cloning and Stem Cells: let's get more clear and distinct', Monash Bioethics Review, vol. 22, no. 1, 2003, p. 12.
58 LRC 364, Queensland Institute of Medical Research, 2, LRC672, p3 (Anglican Diocese of Sydney). See The Report, p. xvii.
59 The Report, p. 170.
60 Oral evidence, Sydney Hearings, Reverend Dr Andrew Cameron and Reverend Dr Andrew Ford, Anglican Archdiocese of Sydney quoted in The Report, p. 59.
61 Oral evidence, Adelaide Hearings, Associate professor Wendy Rogers, Department of medical Education, Flinders University quoted at The Report, p. 59.
62 For an argument in favour of human reproductive cloning see Blackford R, 'Human cloning and 'postmodern' society', Monash Bioethics Review, vol. 24, no. 1, 2005, p. 10.
63 The review committee recommended that legislation make illegal the development of embryos created by nuclear transfer beyond fourteen days and the implantation of such an embryo into a women's reproductive tract. The Report, pp xvii, 60, 163-164.
64 LRC 246, National Civic Council, LRC 273, Mrs Nola Drum, The Report, p. 65.
65 LRC 246, National Civic Council, LRC 273, Mrs Nola Drum.
66 LRC246 National Civic Council and LRC 451 Southern Cross Bioethics, The Report, p, 66.
67 LRC 819 Sydney IVF, p. 9.
68 The Report, Recommendations 31-33, p. 176.
69 The Report, p. 171, 175-176.
70 The Report, p. 171.
71 The Report, Recommendation 24, p. 172.
72 LRC 895 Centre for Worldview Studies. Sources of adult stem cells include umbilical cord blood and bone marrow.
73 LRC 217 Professor Alan Mackay-Sim, Deputy Director, Eskitis Institute for Cell and Molecular Therapies, Griffith University. LRC 376, Queensland Right to Life, Submission 361 Australian Family Association.
74 Submissions to Lockhart Review, LRC509, Monash University, LRC308 SpinalCure Australia
75 The Report, p. 170.
76 The Report, pp 70-71, (p. 170).
77 LRC18, Australian Academy of Science, The Report, p 72.

78 Robertson JA, 'Human embryonic stem cell research: ethical and legal issues' Nature Reviews: genetics, vol. 2, no. 1, 2001, pp. 74, 75.
79 Oral evidence, Adelaide Hearings, Dr Peter Woolcock, Deputy Chair, South Australian Council on Reproductive Technology, The Report, p. 80.
80 LRC784, Dr Michael Carey, University of Technology, Sydney, The Report, p. 80.
81 LRC449, Third-year Bachelor of Biomedical Science students, University of Melbourne, The Report, p 81.
82 For example, Submissions to Lockhart Review, LRC509, Monash University, LRC308 SpinalCure Australia, LRC 396 Stem Cell Ethics Australia, LRC 819 Sydney IVF.
83 The Report, p 81. Although one submission from an individual with a spinal cord injury did not accept that destroying human embryos was justified to possibly find a cure for her condition. LRC56. Ms Joy Hockings, The Report, p. 81.
84 LRC308, SpinalCure Australia, p. 3. This submission contains extracts from several research articles revealing promising research results regarding the use of stem cells to regenerate the spinal cords of animals. See for example: McDonald JW, Becker D, Holekamp TF, Howard M, Liu S, Lu A, Lu J, Platik MM, Qu Y, Stewart T, Vadivelu S, 'Repair of the injured spinal cord and the potential of Embryonic Stem Cell transplantation', Journal of Neurotrauma, vol. 21, 2004, p. 383.
85 ibid.
86 LRC 180 Diabetes Transplant Unit, p. 1.
87 LRC 895 Centre for Worldview Studies 5, this issue was addressed in Wertheim M, 'Clones, stem cells and the future of medicine', Australasian Science, vol. 23, no. 8, 2002, pp. 23, 27.
88 The Report, p. 62. See also LRC450 AusBiotech Ltd, p. 9, LRC614 Australian Association of Neurologists.
89 LRC318, Stem Cell Sciences Ltd quoted at The Report, p. 62.
90 The Report, p. 63.
91 Oral evidence, Melbourne Hearings, Emeritus Professor Jack Martin, University of Melbourne, The Report, p. 63.
92 Oral evidence, Sydney hearings, Professor Julian Savelescu, Director Oxford Uehiro Centre for Practical Ethics, University of Oxford, The Report, p. 63.
93 The Report, p. xvii.
94 Guning J, Assisted Conception, Research, Ethics and Law, England: Dartmouth Ashgate, 2000, pp. 51-4. Professor Morgan D, 'Time for hard cell', The Courier Mail, December 21, 2005, p. 25.
95 Oral evidence, Sydney Hearings, Ms Joanna Knott, representing the Coalition for the Advancement of Medical Research Australia quoted at The Report, p. 64.
96 Bottomley S and Parker S, Law in Context, Sydney: Federation Press, 1997, pp. 34-6.
97 Beauchamp TL and Childress JF, Principles of Biomedical Ethics, Oxford: Oxford University Press, 2001, pp. 340-3.
98 LRC 396, Stem Cell Ethics Australia.
99 The Report, p. 162.
100 The Report, p. xiii.
101 The Report, p. 82-8.
102 The Report, p. xiii.
103 LRC 396, Stem Cell Ethics Australia.
104 The Report, p. 60.
105 Oral evidence, Sydney hearings, Professor Julian Savelescu, Director Oxford Uehiro Centre for Practical Ethics, University of Oxford, The Report, p. 63.

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